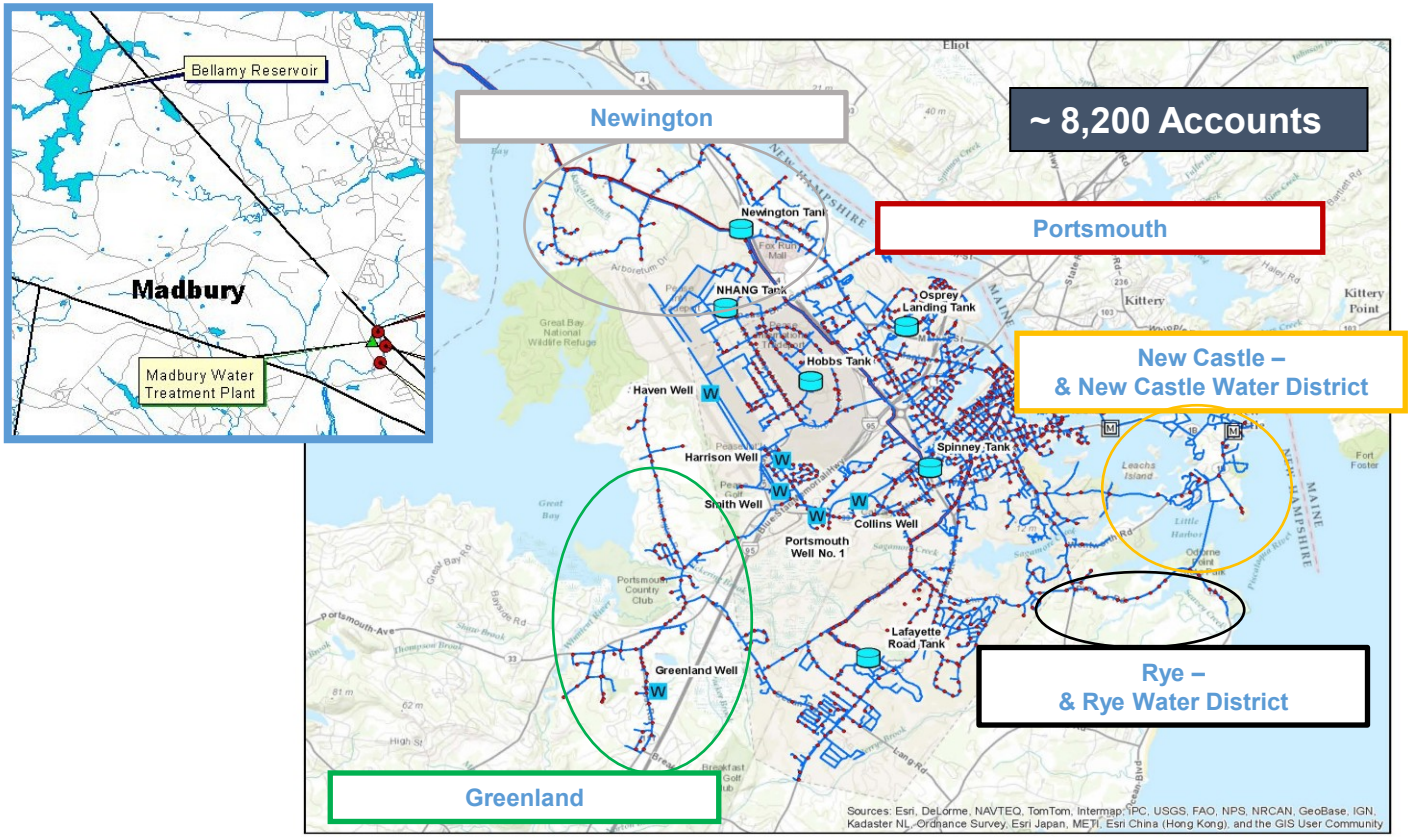
Portsmouth Responds to Emerging Contaminant at Pease Tradeport Water System

New Hampshire Drinking Water Source
Protection Conference
May 11, 2016

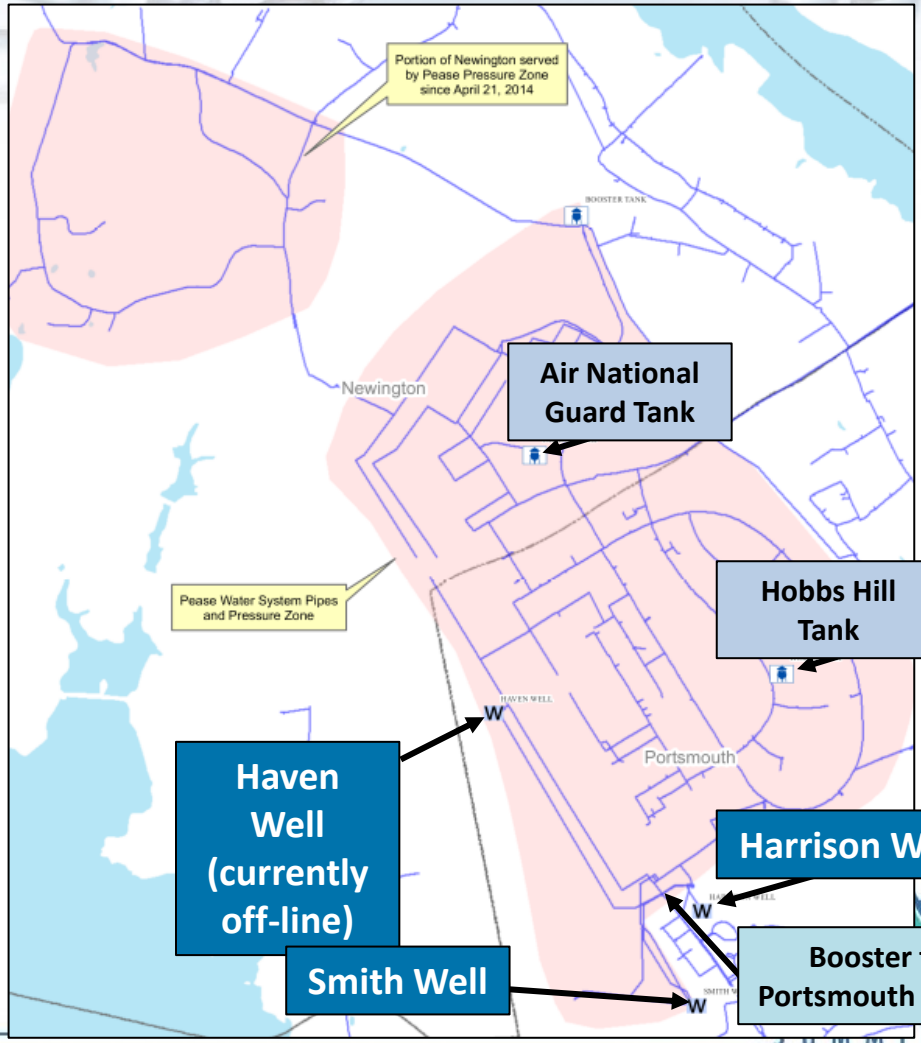
Brian Goetz – Deputy Director of Public Works

Portsmouth Regional Water System Service Area

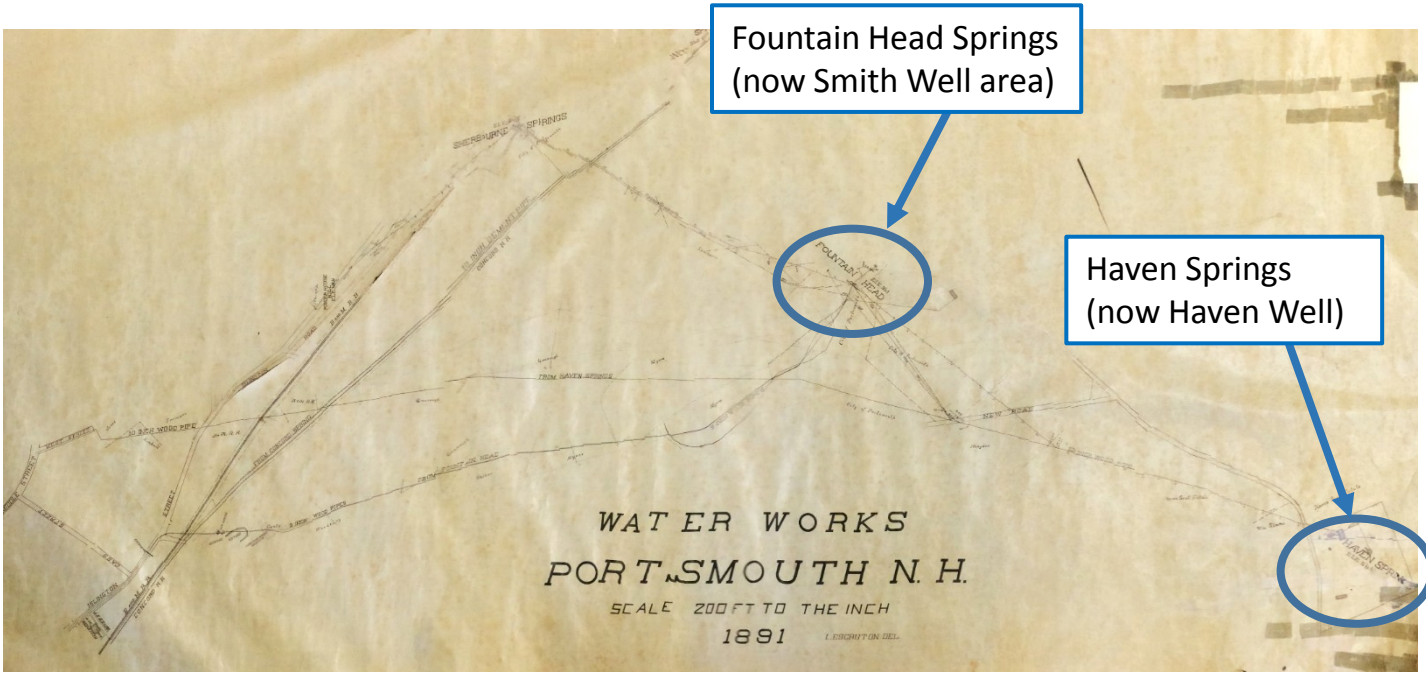


Pease Tradeport Water System

- 3 Wells
- 2 Storage Tanks
- Booster from Portsmouth to Pease
- 30 Miles of water main
- 0.4 to 1.0 Million Gallons per Day Usage



Portsmouth (Pease) Water Sources in 1891:



Haven Well

- **Installed in 1875 (Haven Springs)**
- **Pease Air Base: 1956 to 1992**
- **PDA/Portsmouth: 1992 to 2014**
- **500 GPM Pump**

Pease Air Base Closure - Superfund

- Eleven Record of Decisions (ROD) representing all the major Superfund cleanup decisions were completed between 1993 and 1997.
- All remedial design and construction activities for the Base have also been completed.
- Haven Well had an extensive monthly monitoring program to track any potential contaminants nearing the well.

Haven Well Water Quality August 2013

Water Quality Met all Drinking Water Standards All Non Detects "ND"

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

NH DPHS PHL WATER ANALYSIS LAB
29 HAZEN DR
CONCORD NH 03302
Phone: (603) 271-2994
Fax: (603) 271-2997

ANALYTICAL RESULTS

Batch ID/Form: A305509 - CHEMICAL MONITORING **Submitting Lab ID:** 3000

PWS ID/Name: 1951020 - PEASE TRADE PORT - PORTSMOUTH **Report Date:** 08/08/2013

Analytical Method: 504.1

1,2-DIBROMO-3-CHLOROPROPANE	ND
1,2-DIBROMOETHANE(EDB)	ND

Analytical Method: 505

CHLORDANE	ND
TOXAPHENE	ND

Analytical Method: 524.2

1,1,1,2-TETRACHLOROETHANE	ND
1,1,1-TRICHLOROETHANE	ND
1,1,2,2-TETRACHLOROETHANE	ND
1,1,2-TRICHLOROETHANE	ND
1,1-DICHLOROETHANE	ND
1,1-DICHLOROETHENE	ND
1,1-DICHLOROPROPENE	ND
1,2,3-TRICHLOROBENZENE	ND
1,2,3-TRICHLOROPROPANE	ND
1,2,4-TRICHLOROBENZENE	ND
1,2,4-TRIMETHYLBENZENE	ND
1,2-DIBROMO-3-CHLOROPROPANE	ND
1,2-DIBROMOETHANE(EDB)	ND
1,2-DICHLOROBENZENE	ND
1,2-DICHLOROETHANE	ND
1,2-DICHLOROPROPANE	ND
1,3,5-TRICHLOROBENZENE	ND
1,3,5-TRIMETHYLBENZENE	ND
1,3-DICHLOROBENZENE	ND
1,3-DICHLOROPROPANE	ND
1,4-DICHLOROBENZENE	ND
2,2-DICHLOROPROPANE	ND
2-BUTANONE(MEK)	ND
2-CHLOROTOLUENE	ND
2-HEXANONE	ND
2-METHOXY-2-METHYLBUTANE(TAME)	ND
4-CHLOROTOLUENE	ND
4-METHYL-2-PENTANONE (MIBK)	ND
ACETONE	ND
BENZENE	ND
BROMOBENZENE	ND
BROMOCHLOROMETHANE	ND
BROMODICHLOROMETHANE	ND
BROMOFORM	ND
BROMOMETHANE	ND
CARBON DISULFIDE	ND
CARBON TETRACHLORIDE	ND
CHLOROBENZENE	ND
CHLOROETHANE	ND
CHLOROFORM	ND
CHLOROMETHANE	ND
CIS-1,2-DICHLOROETHENE	ND
CIS-1,3-DICHLOROPROPENE	ND
DIBROMOCHLOROMETHANE	ND
DIBROMOMETHANE	ND
DICHLORODIFLUOROMETHANE	ND
DIETHYL ETHER	ND
DIISOPROPYL ETHER (DIPE)	ND
ETHYL-T-BUTYL ETHER (ETBE)	ND
ETHYLBENZENE	ND
HEXACHLOROBUTADIENE	ND
ISOPROPYLBENZENE	ND
M/P-XYLENE	ND
METHYL-T-BUTYLETHER (MTBE)	ND
METHYLENE CHLORIDE	ND
N-BUTYLBENZENE	ND
N-PROPYLBENZENE	ND
NAPHTHALENE	ND
O-XYLENE	ND
P-ISOPROPYLTOLUENE	ND
SEC-BUTYLBENZENE	ND
STYRENE	ND
T-BUTANOL (TBA)	ND
T-BUTYLBENZENE	ND
TETRACHLOROETHENE	ND
TETRAHYDROFURAN(THF)	ND
TOLUENE	ND
TOTAL XYLENES	ND
TRANS-1,2-DICHLOROETHENE	ND
TRANS-1,3-DICHLOROPROPENE	ND
TRICHLOROETHENE	ND
TRICHLOROFLUOROMETHANE	ND
VINYL CHLORIDE	ND

Analytical Method: 525.2

2,2',3',4,6-PENTACHLOROBIPHENYL	ND
2,2',3,3',4,4'6HEPTACHLOROBIPHEN	ND
2,2',3,3',4,5'6,6'OCTACHLOROBIPH	ND
2,2',4,4'-TETRACHLOROBIPHENYL	ND
2,2',4,4',5,6'HEXACHLOROBIPHENYL	ND
2,3-DICHLOROBIPHENYL	ND
2,4,5-TRICHLOROBIPHENYL	ND
2-CHLOROBIPHENYL	ND
2-METHYLNAPHTHALENE	ND
4,4'-DDD	ND
4,4'-DDE	ND
4,4'-DDT	ND
ACENAPHTHENE	ND
ACENAPHTHYLENE	ND
ALACHLOR	ND
ALDRIN	ND
ALPHA-CHLORDANE	ND
ANTHRACENE	ND
ATRAZINE	ND
BENZO(A)ANTHRACENE	ND
BENZO(A)PYRENE	ND
BENZO(B)FLUORANTHENE	ND
BENZO(G,H,I)PERYLENE	ND
BENZO(K)FLUORANTHENE	ND
BENZYL BUTYL PHTHALATE	ND
BIS(2-ETHYLHEXYL) PHTHALATE	ND
BUTACHLOR	ND
CHRYSENE	ND
DI(2-ETHYLHEXYL)ADIPATE	ND
DI-N-BUTYL PHTHALATE	ND
DIBENZ(A,H)ANTHRACENE	ND
DIELDRIN	ND
DIETHYL PHTHALATE	ND
DIMETHYL PHTHALATE	ND
ENDRIN	ND
ENDRIN ALDEHYDE	ND
FLUORANTHENE	ND
FLUORENE	ND
GAMMA-CHLORDANE	ND
HEPTACHLOR	ND
HEPTACHLOR EPOXIDE	ND
HEXACHLOROBENZENE	ND
HEXACHLOROCYCLOPENTADIENE	ND
INDENO(1,2,3-CD)PYRENE	ND
ISOPHORONE	ND
LINDANE	ND
METHOXYCHLOR	ND
METOLACHLOR	ND
METRIBUZIN	ND
NAPHTHALENE	ND
PENTACHLOROPHENOL	ND
PHENANTHRENE	ND
PROPACHLOR	ND
PYRENE	ND
SIMAZINE	ND

Analytical Method: 525.2

TRANS-NONACHLOR	ND
TRIFLURALIN (TREFLAN)	ND

Analytical Method: 531.2

3-HYDROXY-CARBOFURAN	ND
ALDICARB	ND
ALDICARB SULFONE	ND
ALDICARB SULFOXIDE	ND
CARBARYL	ND
CARBOFURAN	ND
METHOMYL	ND
OXAMYL	ND

Analytical Method: 547

GLYPHOSATE	ND

Analytical Method: 555

2,4-D	ND
ACIFLUORFEN	ND
DICAMBA	ND
DINOSEB	ND
PICLORAM	ND
SILVEX	ND

Analytical Method: LACHAT 10-109-12-2-A

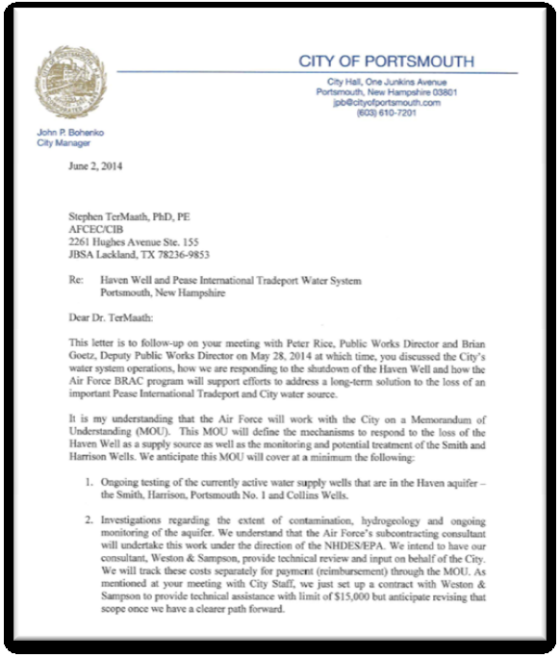
FLUORIDE	ND

Haven Well Shutdown: Chronology of Events

- April 2014 – City Contacted by EPA regarding their request that Air Force sample the Pease Wells for PFCs
- Air Force Consultant sampled all three Pease wells in mid-April 2014 for PFCs
- May 12, 2014 – City staff are notified that PFC levels in Haven Well exceeded the EPA's Health Advisory Standard for PFOS
  - 2.5 ug/L (Preliminary Health Advisory = 0.2 ug/L)
- May 12, 2014 - Haven Well is shut down
- Since May 12, 2014 - Pease water system is supplemented with water from Portsmouth's water system (50% of demand supplied by Portsmouth)

Haven Well Shutdown: Chronology of Events

- **June 2, 2014** – Letter from Portsmouth City Manager to the Air Force requesting:
- 1) Ongoing testing of currently active water supply wells
- 2) Investigations regarding the extent of contamination, hydrogeology and ongoing monitoring of aquifer.
- 3) Reimbursement of the City's hydrogeological consultant to perform investigations for replacement of the Haven Well
- 4) Assessments of potential water treatment systems for Pease Wells.



CITY OF PORTSMOUTH

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(603) 610-7201

John P. Bohenko
City Manager

June 2, 2014

Stephen TerMaath, PhD, PE
AFCEC/CIB
2261 Hughes Avenue Ste. 155
JBSA Lackland, TX 78236-9853

Re: Haven Well and Pease International Tradeport Water System
Portsmouth, New Hampshire

Dear Dr. TerMaath:

This letter is to follow-up on your meeting with Peter Rice, Public Works Director and Brian Goetz, Deputy Public Works Director on May 28, 2014 at which time, you discussed the City's water system operations, how we are responding to the shutdown of the Haven Well and how the Air Force BRAC program will support efforts to address a long-term solution to the loss of an important Pease International Tradeport and City water source.

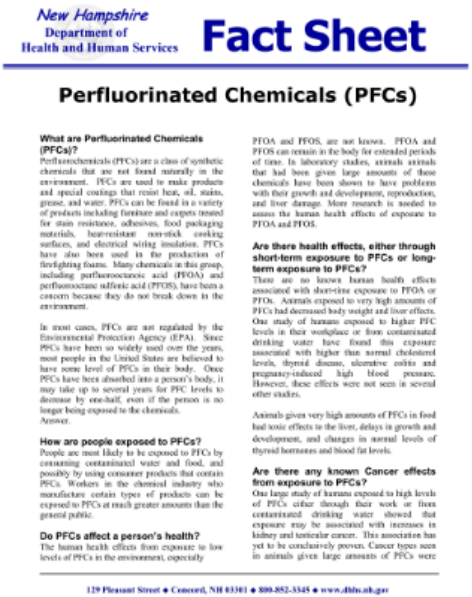
It is my understanding that the Air Force will work with the City on a Memorandum of Understanding (MOU). This MOU will define the mechanisms to respond to the loss of the Haven Well as a supply source as well as the monitoring and potential treatment of the Smith and Harrison Wells. We anticipate this MOU will cover at a minimum the following:

1. Ongoing testing of the currently active water supply wells that are in the Haven aquifer – the Smith, Harrison, Portsmouth No. 1 and Collins Wells.

2. Investigations regarding the extent of contamination, hydrogeology and ongoing monitoring of the aquifer. We understand that the Air Force's subcontracting consultant will undertake this work under the direction of the NHDES/EPA. We intend to have our consultant, Weston & Sampson, provide technical review and input on behalf of the City. We will track these costs separately for payment (reimbursement) through the MOU. As mentioned at your meeting with City Staff, we just set up a contract with Weston & Sampson to provide technical assistance with limit of $15,000 but anticipate revising that scope once we have a clearer path forward.

The Key Questions:

1. What are these contaminants?
2. What are their levels?
3. Where did they come from?
4. What are the health effects?
5. How will the water system replace the lost water?
6. Have other water systems been contaminated?
7. What are the treatment options?



New Hampshire
Department of
Health and Human Services

Fact Sheet

Perfluorinated Chemicals (PFCs)

What are Perfluorinated Chemicals (PFCs)?

Perfluorochemicals (PFCs) are a class of synthetic chemicals that are not found naturally in the environment. PFCs are used to make products and special coatings that resist heat, oil, stains, grease, and water. PFCs can be found in a variety of products including furniture and carpets treated for stain resistance, adhesives, food packaging materials, heat-resistant non-stick cooking surfaces, and electrical wiring insulation. PFCs have also been used in the production of firefighting foams. Many chemicals in this group, including perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), have been a concern because they do not break down in the environment.

In most cases, PFCs are not regulated by the Environmental Protection Agency (EPA). Since PFCs have been so widely used over the years, most people in the United States are believed to have some level of PFCs in their body. Once PFCs have been absorbed into a person's body, it may take up to several years for PFC levels to decrease by one-half, even if the person is no longer being exposed to the chemicals.
Answer.

How are people exposed to PFCs?

People are most likely to be exposed to PFCs by consuming contaminated water and food, and possibly by using consumer products that contain PFCs. Workers in the chemical industry who manufacture certain types of products can be exposed to PFCs at much greater amounts than the general public.

Do PFCs affect a person's health?

The human health effects from exposure to low levels of PFCs in the environment, especially PFOA and PFOS, are not known. PFOA and PFOS can remain in the body for extended periods of time. In laboratory studies, animals animals that had been given large amounts of these chemicals have been shown to have problems with their growth and development, reproduction, and liver damage. More research is needed to assess the human health effects of exposure to PFOA and PFOS.

Are there health effects, either through short-term exposure to PFCs or long-term exposure to PFCs?

There are no known human health effects associated with short-time exposure to PFOA or PFOS. Animals exposed to very high amounts of PFCs had decreased body weight and liver effects. One study of humans exposed to higher PFC levels in their workplace or from contaminated drinking water have found this exposure associated with higher than normal cholesterol levels, thyroid disease, ulcerative colitis and pregnancy-induced high blood pressure. However, these effects were not seen in several other studies.

Animals given very high amounts of PFCs in food had toxic effects to the liver, delays in growth and development, and changes in normal levels of thyroid hormones and blood fat levels.

Are there any known Cancer effects from exposure to PFCs?

One large study of humans exposed to high levels of PFCs either through their work or from contaminated drinking water showed that exposure may be associated with increases in kidney and testicular cancer. This association has yet to be conclusively proven. Cancer types seen in animals given large amounts of PFCs were

129 Pleasant Street ♦ Concord, NH 03301 ♦ 800-852-3345 ♦ www.dhhs.nh.gov

1 – What are these Contaminants?

Perfluorinated Hydrocarbons –
In a Lot of Everyday Products

- Furniture and carpets treated for stain resistance, adhesives, food packaging materials, heat-resistant non-stick cooking surfaces, and electrical wiring insulation.
- PFCs have also been used in the production of firefighting foams.

New Hampshire Department of Health and Human Services **Fact Sheet**

2 – What are their Levels?

Sample Location	Collection Date	Perfluorobutane sulfonate	Perfluorodecanoic acid	Perfluorododecanoic acid	Perfluoroheptanoic acid	Perfluorohexane sulfonate	Perfluorohexanoic acid	Perfluorononanoic acid	Perfluorooctane sulfonate (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid	Perfluoroundecanoic acid
PHA (µg/L)		--	--	--	--	--	--	--	0.2	0.4	--	--
HAVEN	16-Apr-14	0.051	0.0049 J	ND	0.12	0.83	0.33	0.017	**2.5**	0.35	0.27	ND
HAVEN	14-May-14	0.051	0.0043 J	ND	0.12	0.96	0.35	0.017	**2.4**	0.32	0.26	ND
HARRISON	16-Apr-14	0.002 J	ND	ND	0.0046 J	0.036	0.0087	ND	0.048	0.009	0.0079	ND
HARRISON	14-May-14	0.0019 J	ND	ND	0.0042 J	0.032	0.01	ND	0.041	0.0086	0.0084	ND
SMITH	16-Apr-14	0.00094 J	0.0044 J	0.012	0.0025 J	0.013	0.0039 J	ND	0.018	0.0035 J	0.0035 J	0.017
SMITH	14-May-14	0.00087 J	ND	ND	0.002 J	0.013	0.004 J	ND	0.015	0.0036 J	0.0034 J	ND

Notes:

Grey text indicates the parameter was not detected.

indicates concenetration above PHA

J - estimated value

all results in µg/L

ND - non detect

PHA - Provisional Health Advisory

-- indicates no established PHA

Haven Well – above the Preliminary Health Advisory (PHA) for PFOS

Harrison and Smith Wells – below the PHA for PFOS

What Level is “Non Detect”?

- EPA Method covers 6 compounds
- Maxxum Analytical Method includes 23 compounds and has lower reporting limits
- Technical Team chose to go with Maxxum to provide better identification and tracking of contamination

3 – What Level is "Non Detect"?

Maxxum Lab versus UCMR Limits

		Maxxam Lab/In-House Reporting Levels		UCMR ANALYTES AND REPORTING LIMIT	Order of Magnitude: Maxxum MDL vrs UCMR
	Units	RDL	Typical MDL - reported on lab reports		
6:2 Fluorotelomer sulfonate	ug/L	0.05	0.0150		
8:2 Fluorotelomer sulfonate	ug/L	0.05	0.0130		
N-ethylperfluorooctane sulfonamide	ug/L	0.05	0.0053		
N-ethylperfluorooctane sulfonamidoe	ug/L	0.05	0.0026		
N-methylperfluorooctane sulfonamide	ug/L	0.05	0.0027		
N-methylperfluorooctanesulfonamidol	ug/L	0.05	0.0053		
Perfluorobutane Sulfonate (PFBS)	ug/L	0.02	0.0024	0.09	38x
Perfluorobutanoic acid	ug/L	0.02	0.0023		
Perfluorodecane Sulfonate	ug/L	0.02	0.0039		
Perfluorodecanoic Acid (PFDA)	ug/L	0.02	0.0030		
Perfluorododecanoic Acid (PFDoA)	ug/L	0.02	0.0051		
Perfluoroheptane sulfonate	ug/L	0.02	0.0043		
Perfluoroheptanoic Acid (PFHpA)	ug/L	0.02	0.0026	0.01	4x
Perfluorohexane Sulfonate (PFHxS)	ug/L	0.02	0.0030	0.03	10x
Perfluorohexanoic Acid (PFHxA)	ug/L	0.02	0.0027		
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	0.02	0.0033	0.02	6x
Perfluorononanoic Acid (PFNA)	ug/L	0.02	0.0024	0.02	8x
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.02	0.0024		
Perfluorooctane Sulfonate (PFOS)	ug/L	0.02	0.0036	0.04	11x
Perfluoropentanoic Acid (PFPeA)	ug/L	0.02	0.0028		
Perfluorotetradecanoic Acid	ug/L	0.02	0.0063		
Perfluorotridecanoic Acid	ug/L	0.02	0.0078		
Perfluoroundecanoic Acid (PFUnA)	ug/L	0.02	0.0051		

PFC Levels in Harrison and Smith Wells

Table 1
Summary of PFC Analytical Results
Public Water Supply Monitoring Program
Former Pease Air Force Base, New Hampshire

Well Type	Sample Location	Sample ID	Collection Date	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl Perfluorooctane Sulfonamide (MEFOSA)	N-Methyl Perfluorooctane Sulfonamidoethanol (MEFOSE)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonate (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonate (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)
USEPA Provisional Health Advisory (PHA):				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.200	0.400	-	-	-	-
		HARRISON_02162016	02/16/16	ND	ND	ND	ND	ND	ND	0.010 J	0.009 J	ND	ND	ND	0.008 J	0.006 J	0.033 B	0.011 J	ND	ND	0.027 B	0.007 J	0.011 J	ND	ND	ND
		SMITH_02232016	02/23/16	ND	ND	ND	ND	ND	ND	0.007 J	ND	ND	ND	ND	ND	ND	0.017 B	0.007 J	ND	ND	0.012 B	ND	ND	ND	ND	ND

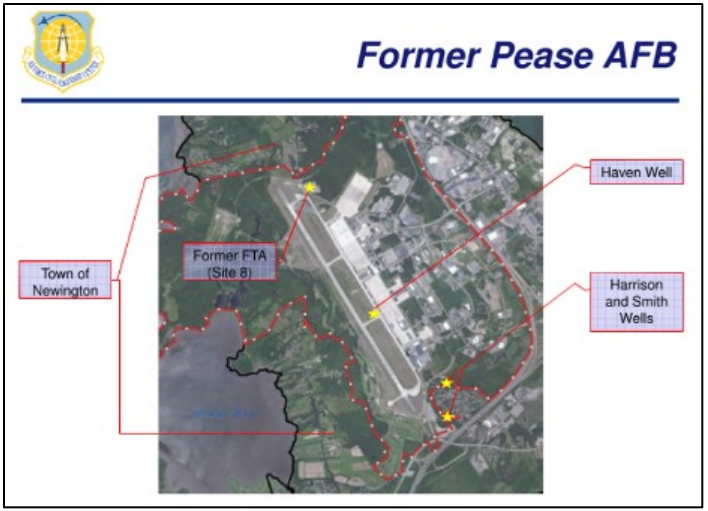
Notes:
Grey text indicates the parameter was not analyzed or not detected.
All concentrations in µg/L - micrograms per liter
All values in micrograms per liter
D - duplicate sample
J - The result is an estimated value.
B - Detected in Blank.

USEPA - Environmental Protection Agency
NA - Not Analysed
µg/L - micrograms per liter
ND - Not detected
PHA - Provisional Health Advisory screening value (EPA 2009)
— - No PHA available

- Harrison:
  - 0.027 ppb PFOS
  - 0.007 ppb PFOA
- Smith:
  - 0.012 ppb PFOS
  - ND for PFOA
- Wells are combined and blended with Portsmouth water system water

3 – Where Did They Come From?

- In 1970, the Air Force began using Aqueous Film Forming Foam (AFFF), a firefighting agent that contains PFCs, to extinguish petroleum fires.
- A few reported fires prior to 1992
- Potential releases and spills



4 – What Are the Health Effects?

New Hampshire Department of Environmental Services:

Studies have shown that nearly all people have some level of PFCs in their blood. Potential health effects from exposure to low levels of PFCs are not well understood. To date studies have been inconclusive as to whether PFCs can affect growth and development, hormone levels including thyroid hormone, liver enzyme levels, cholesterol levels, immune function or occurrence of certain types of cancer. Further research is needed to determine whether PFCs can cause health changes in humans. The EPA states that existing evidence is too limited to support a strong link between PFCs and cancer in people.

http://des.nh.gov/media/pr/2016/20160304-saint-gobain.htm

5 – How Will the Water System Replace the Loss of the Haven Well?

- Loss of the largest water source serving the Pease Tradeport:
  - Safe yield of 534 Gallons per minute (GPM) – 769,000 Gallons per day (GPD)
- Portsmouth water system has been supplementing Pease through booster pumps:
  - Reduces the available water to Portsmouth's core water system by nearly 10%

6 – Have Other Water Systems Been Contaminated by PFCs?

- Oakdale, Minnesota – 3M Manufacturing
  - Three public drinking water wells with concentrations up to 0.97 ppb PFOS and 0.86 ppb PFOA
- Newcastle, Delaware – Air Base
  - PFOA and PFOS Compound test results range from non-detect to the highest level detected of 0.44 ppb and 2.3 ppb respectively
- Hoosick Falls, New York – PFC Manufacturing
  - Public Wells sampled above 0.60 ppb of PFOA
- Petersburgh, New York – PFC Manufacturing
  - Public Water Supply sampled at 0.096 ppb of PFOA
- Merrimack, New Hampshire – PFC Manufacturing
  - Merrimack Village District Wells found to have 0.027 to 0.090 ppb of PFOA
- North Bennington, Vermont – PFC Manufacturing
  - PFOA levels in 52 private well samples ranged from 0.038 ppb to 2.73 ppb
- Pownal, Vermont
  - 0.026 and 0.027 ppb of PFOA in public drinking water wells

Other PFC Studies

- Washington State – 2011 Study
  - 10 rivers sampled – PFCs detected in all samples
  - 4 wastewater treatment facility outfalls sampled – PFCs detected in all samples
- Silent Spring Institute 2010 Survey of 20 Public Water Wells
  - Hyannis Water System:
    - PFOA – 22 ng/l (well 2)
    - PFOS – 15 ng/l (airport well), 97 ng/l (well 2)
- Maryland Study of WWTF Discharges and Three Rivers
    - PFOA in all 11 WWTF samples: 5.4 to 76 ng/l
    - PFOS in 8 of 11 WWTF samples: ND to 27 ng/l
    - PFOA in all 3 river samples: 2.5 to 35 ng/l
    - PFOS in all 3 river samples: 5.4 to 22 ng/l

Other PFC Studies

- Silent Spring Institute 2011 Survey of 20 Private Wells
  - Four perfluorinated chemicals (PFOS, PFBS, PFHxS and PFHxA) were found in at least 50% of wells.
  - 11 of 20 wells had PFOS detected:
    - Maximum was 7 ng/l

7 – What are the Treatment Options?

- Activated Carbon Filtration is most widely accepted for drinking water applications
- Membrane Filtration
- Anion Exchange
- Advanced Oxidation

MDH

(http://www.health.state.mn.us/index.html)

Minnesota Department of Health

Oakdale and 3M Work Together to Remove Perfluorochemicals

From the Spring 2010 Minnesota Department of Health Public Water Supply Unit, © *Waterline*, Minnesota Department of Health

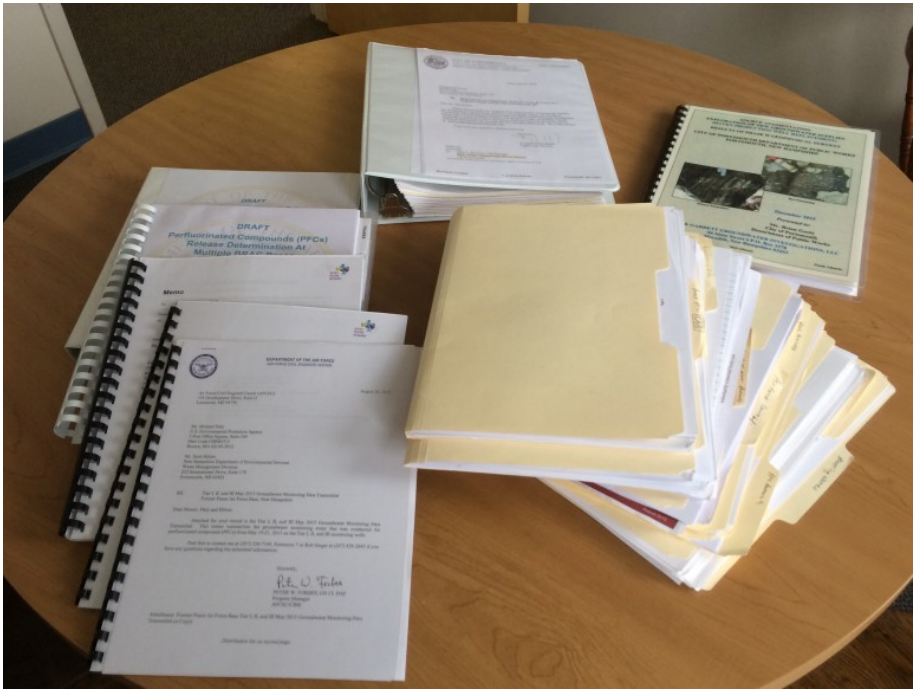
May 2014:
Technical Response Team Forms

- Weekly meetings (initially) either in-person or via teleconference:
  - City of Portsmouth Staff
    - City consultants
  - Pease Development Authority
  - Environmental Protection Agency
  - New Hampshire Department of Environmental Services
    - Waste Division
    - Drinking Water and Groundwater Bureau
  - Air Force Civil Engineering
    - Air Force Consultants
  - New Hampshire Health and Human Services
  - Agency for Toxic Substances and Disease Registry (ATSDR)
  - Others, depending on topic

The Response and Action Plan

- Data Collection
- Forensic Analysis on Contamination
- Health Information
- Water System Operational Changes
  - Existing Supplies
  - Alternative Supplies
  - Treatment Options
- Public Outreach

Volumes of Information…



May 22, 2014 – Press Release

A A A

an official NEW HAMPSHIRE government website

dhhs New Hampshire Department of HEALTH AND HUMAN SERVICES

Families & Children | Women | Teens | Adults | Seniors | People with Disabilities

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- Home
- About DHHS
- Divisions/Offices
- Media
- Statistics
- Online Tools
- Vendors / RFP
- Job Opportunities
- Topics A to Z
- Contact

Press Release

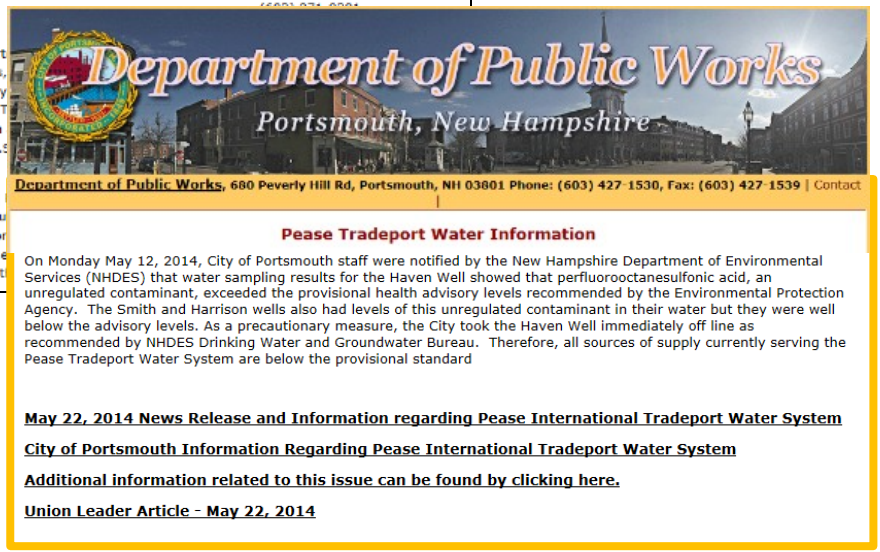
Unregulated Contaminant Found In Pease Tradeport Water System

Publish Date:
May 22, 2014

Contact:
Public Information Office

Concord, NH – The New Hampshire Depart
(DHHS), Division of Public Health Services,
of Environmental Services (DES) are today
(PFOS) from a well that serves the Pease T
PFOS is one of a class of chemicals known
"provisional health advisory" set by the U.S
shut down by the City of Portsmouth.

The water in the other two wells servicing
advisory level. Out of an abundance of cau
tested, since the systems at Pease and Por
used to service the city of Portsmouth. The
wells or surface water sources that serve t



Department of Public Works
Portsmouth, New Hampshire

Department of Public Works, 680 Peverly Hill Rd, Portsmouth, NH 03801 Phone: (603) 427-1530, Fax: (603) 427-1539 | Contact

Pease Tradeport Water Information

On Monday May 12, 2014, City of Portsmouth staff were notified by the New Hampshire Department of Environmental Services (NHDES) that water sampling results for the Haven Well showed that perfluorooctanesulfonic acid, an unregulated contaminant, exceeded the provisional health advisory levels recommended by the Environmental Protection Agency. The Smith and Harrison wells also had levels of this unregulated contaminant in their water but they were well below the advisory levels. As a precautionary measure, the City took the Haven Well immediately off line as recommended by NHDES Drinking Water and Groundwater Bureau. Therefore, all sources of supply currently serving the Pease Tradeport Water System are below the provisional standard

May 22, 2014 News Release and Information regarding Pease International Tradeport Water System

City of Portsmouth Information Regarding Pease International Tradeport Water System

Additional information related to this issue can be found by clicking here.

Union Leader Article - May 22, 2014

Breaking News:

Article published May 22, 2014

Contaminated well shut down at Pease Tradeport

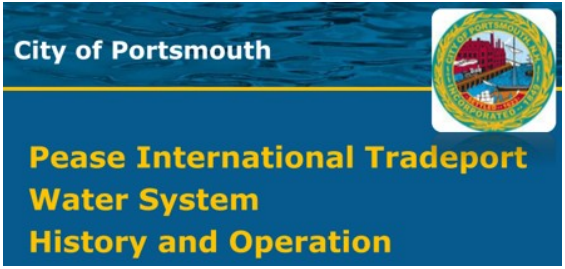
PORTSMOUTH — A well that serves the Pease International Tradeport has been shut down after testing positive for a chemical contaminant, according to the state Department of Environmental Services.

Environment 1:30 PM THU MAY 22, 2014

Pease Well Is Shut Down After Unregulated Contaminant Discovered

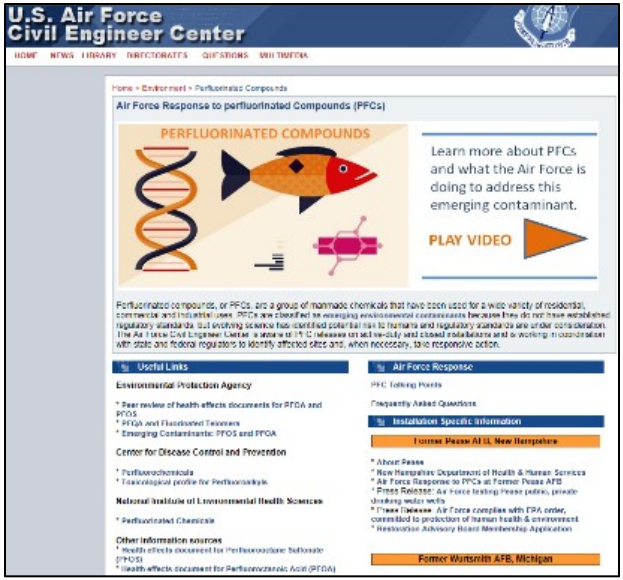
By SAM EVANS-BROWN

May 28, 2014:
State, Health and Water System Officials Hold First Public Meeting



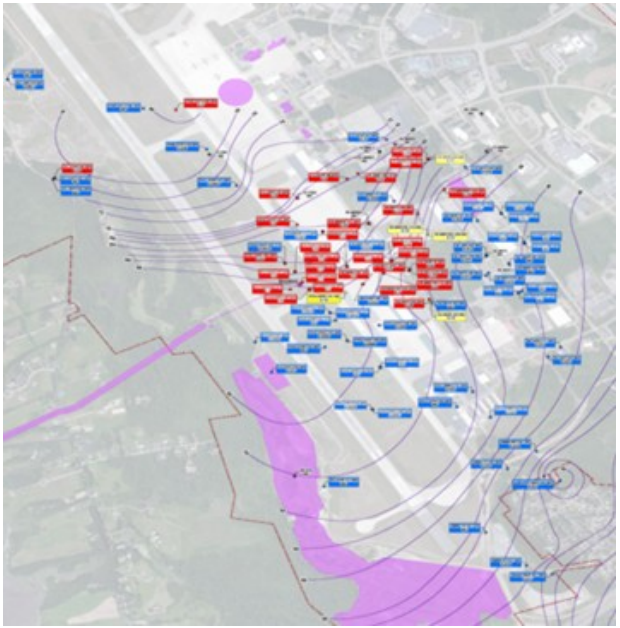
Air Force Involvement

- Funding all the technical work and site monitoring
- September 2014 agreement with City to fund:
  - City's technical support
  - Search for replacement groundwater source

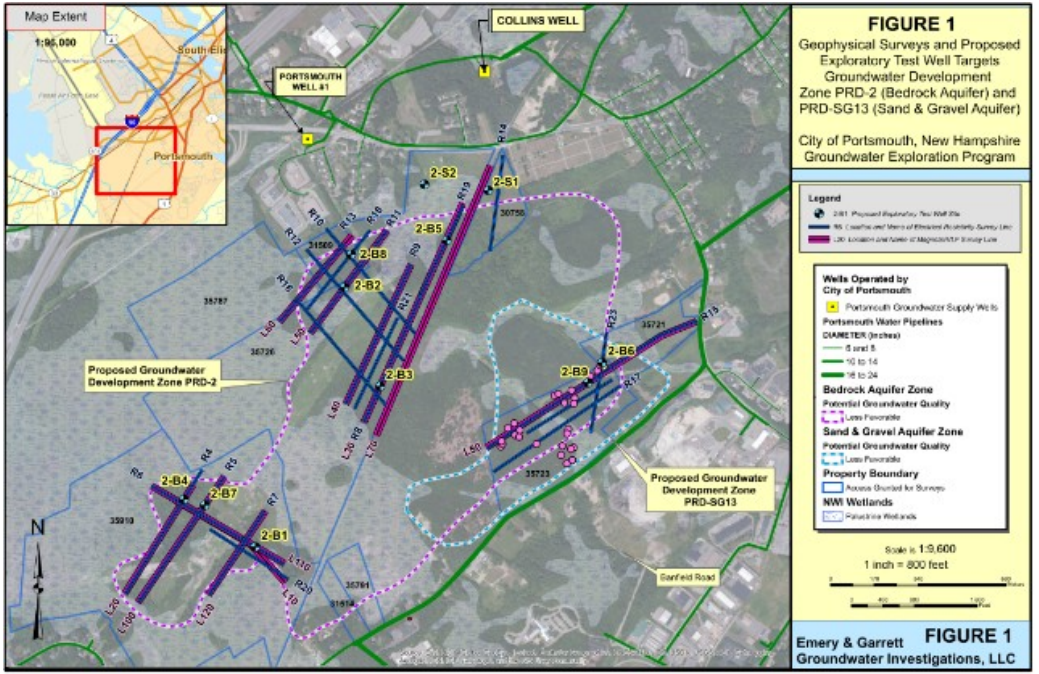


Extensive Monitoring Program Developed

- Weekly PFC sampling of water supply wells
- Sentry well network sampling
- Installation of new sentry wells to fill data gaps
- Hydrogeological evaluations



Fall 2014
Replacement Well Study

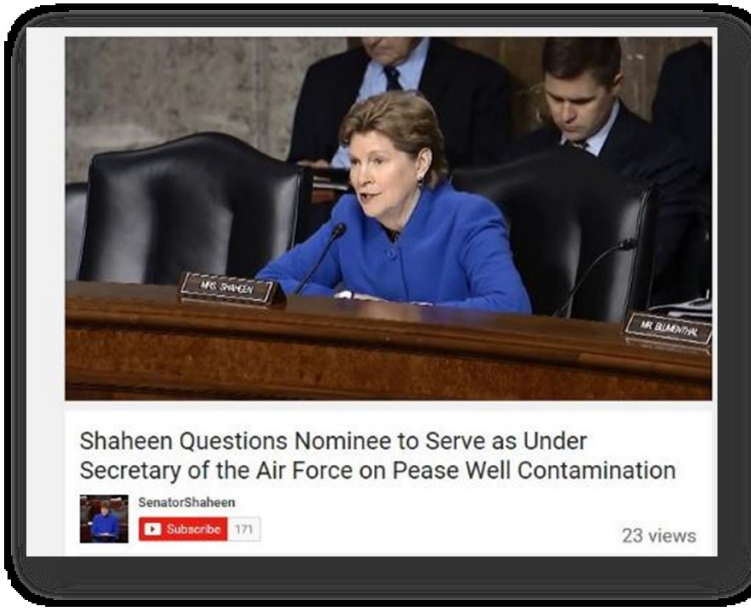


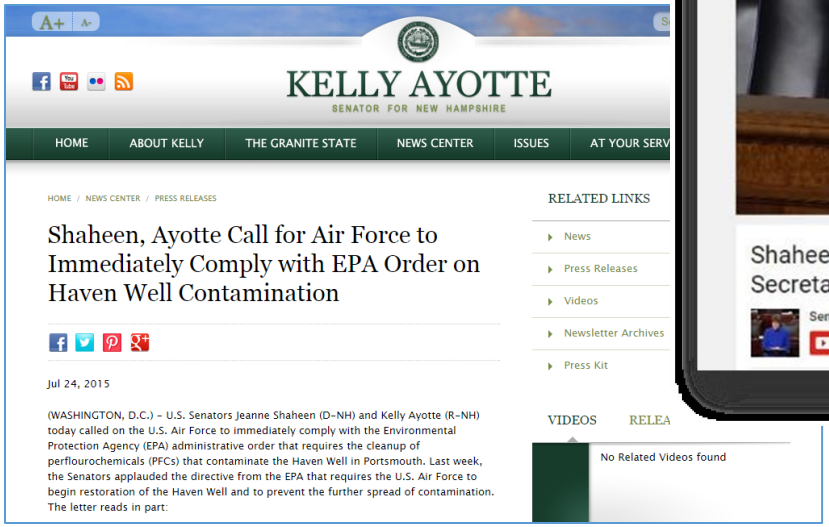
Continued Public Outreach Throughout 2014

- City Website
  - Water System Status
  - Water Quality Monitoring Data
  - Public Meetings
- New Hampshire Department of Health and Human Services
  - Health Effects

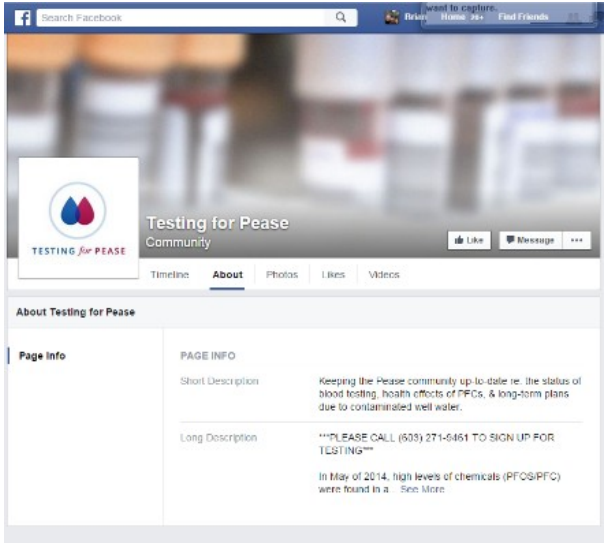
Congressional Delegation Support for:

1) Treatment of Wells
2) Aquifer Restoration
3) Biomonitoring of those effected

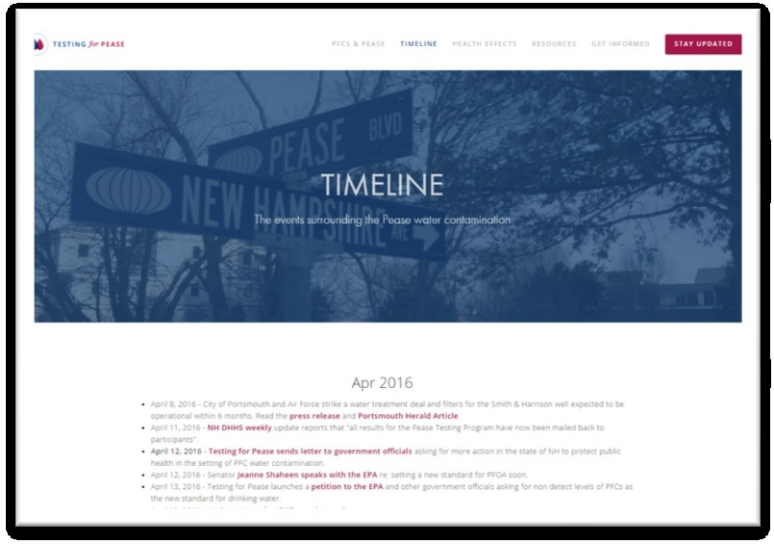




Citizen Involvement – Advocates Blood Testing



Testing for Pease
Facebook Page



Testing for Pease
Website

March 2015 –
Blood Testing Program Announced

By Jennifer Crompton
BIO »

Blood tests planned for those concerned about Pease contamination

Well shut down after contaminants found

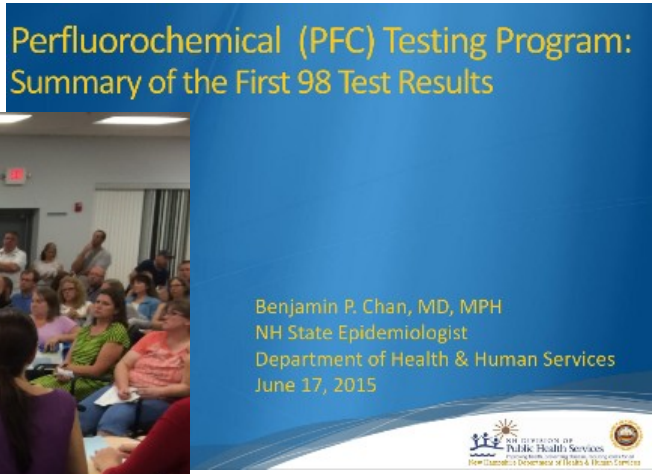
UPDATED 6:21 PM EDT Mar 25, 2015

Text Size: A A A

SHOW TRANSCRIPT »

May 2015
Community Advisory Board Forms
14 Meetings Held in 2015

June 17, 2015 Public Meeting – First Blood Test Results



July 8, 2015
EPA Issues Administrative Order to Air Force:
- Treat Haven Well
- Aquifer Restoration

SHOW TRANSCRIPT »

By Jennifer Crompton
BIO »

EPA orders Air Force to clean up contaminated Pease well

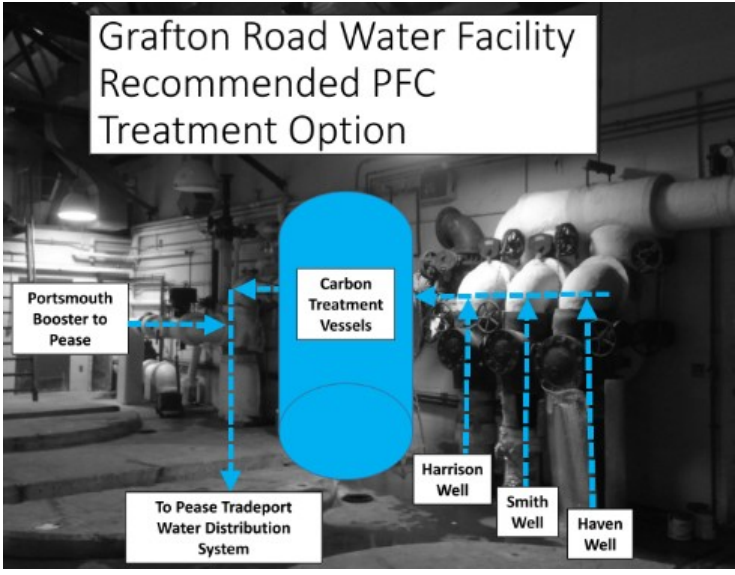
High levels of contaminant found last year

Published 6:10 PM EDT Jul 10, 2015

officials have ordered the Air Force to clean up contaminated
rt.

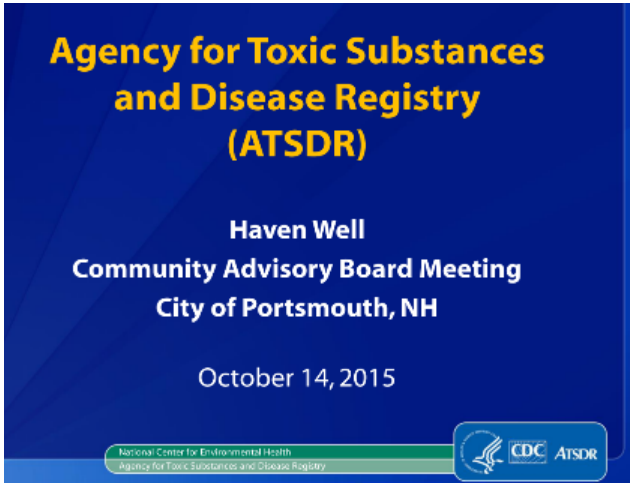
September 1, 2015 Meeting with Air Force and Senator Shaheen

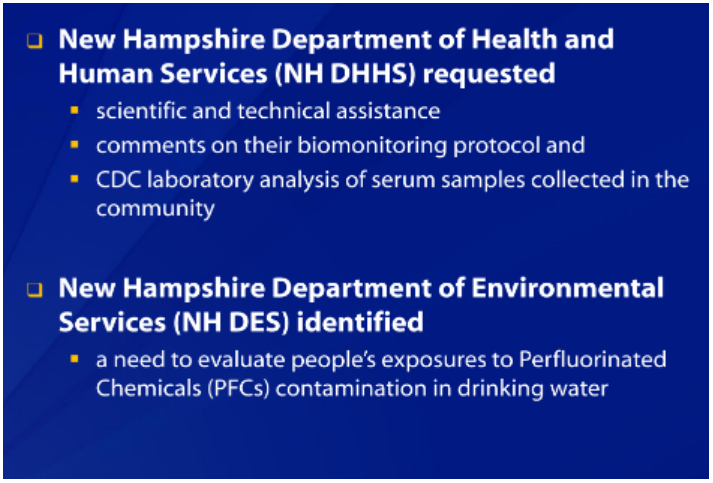
- City presses for treatment of all three Pease Wells
  - Haven to address PFOS PHA exceedance
  - Smith and Harrison to demonstrate treatment and as a contingency



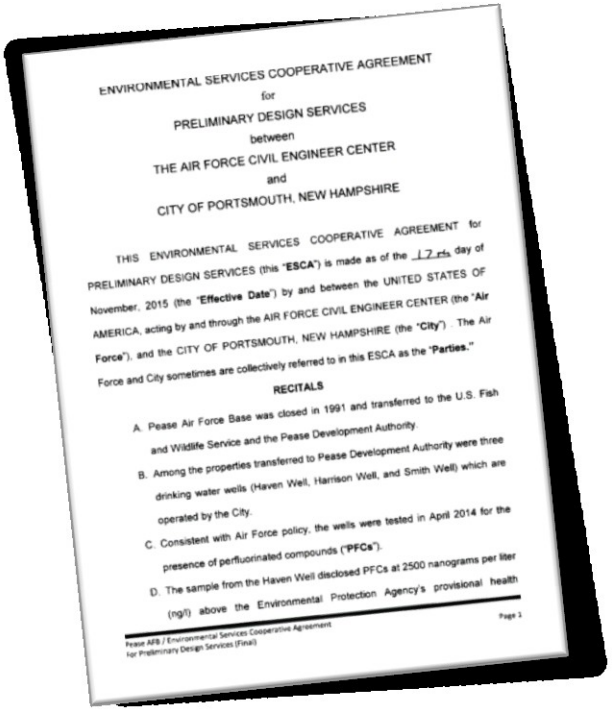
September 9, 2015
Community Advisory Board
Pediatric Blood Testing Results

October 14, 2015
Community Advisory Board Meeting with ATSDR





November 2015
Air Force Agreement to Treat All Three Pease Wells



ENVIRONMENTAL SERVICES COOPERATIVE AGREEMENT
for
PRELIMINARY DESIGN SERVICES
between
THE AIR FORCE CIVIL ENGINEER CENTER
and
CITY OF PORTSMOUTH, NEW HAMPSHIRE

THIS ENVIRONMENTAL SERVICES COOPERATIVE AGREEMENT for PRELIMINARY DESIGN SERVICES (this "**ESCA**") is made as of the 17th day of November, 2015 (the "**Effective Date**") by and between the UNITED STATES OF AMERICA, acting by and through the AIR FORCE CIVIL ENGINEER CENTER (the "**Air Force**"), and the CITY OF PORTSMOUTH, NEW HAMPSHIRE (the "**City**"). The Air Force and City sometimes are collectively referred to in this ESCA as the "**Parties.**"

RECITALS

A. Pease Air Force Base was closed in 1991 and transferred to the U.S. Fish and Wildlife Service and the Pease Development Authority.

B. Among the properties transferred to Pease Development Authority were three drinking water wells (Haven Well, Harrison Well, and Smith Well) which are operated by the City.

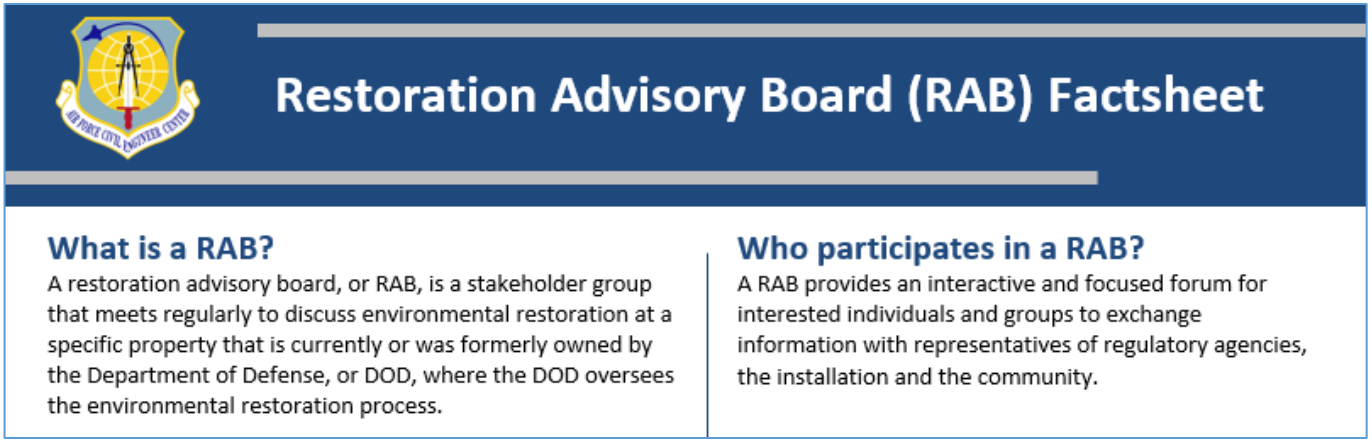
C. Consistent with Air Force policy, the wells were tested in April 2014 for the presence of perfluorinated compounds ("**PFCs**").

D. The sample from the Haven Well disclosed PFCs at 2500 nanograms per liter (ng/l) above the Environmental Protection Agency's provisional health

Well Treatment – Carbon Filters

- Preliminary Design – Complete
- Ongoing work:
  - Piloting - $59,000
  - Harrison/Smith Carbon Filters - $837,000
- Construction of all treatment system upgrades (8 to 12 months)
  - Final Design of full treatment system upgrades
  - Current cost estimate of $8 to $9 million

Restoration Advisory Board (RAB) Reconvenes



Restoration Advisory Board (RAB) Factsheet

What is a RAB?

A restoration advisory board, or RAB, is a stakeholder group that meets regularly to discuss environmental restoration at a specific property that is currently or was formerly owned by the Department of Defense, or DOD, where the DOD oversees the environmental restoration process.

Who participates in a RAB?

A RAB provides an interactive and focused forum for interested individuals and groups to exchange information with representatives of regulatory agencies, the installation and the community.

- Brian Goetz, Deputy Director of Public Works, is the staff representative coordinating the City's Involvement

Restoration Advisory Board (RAB) April 19, 2016 Meeting

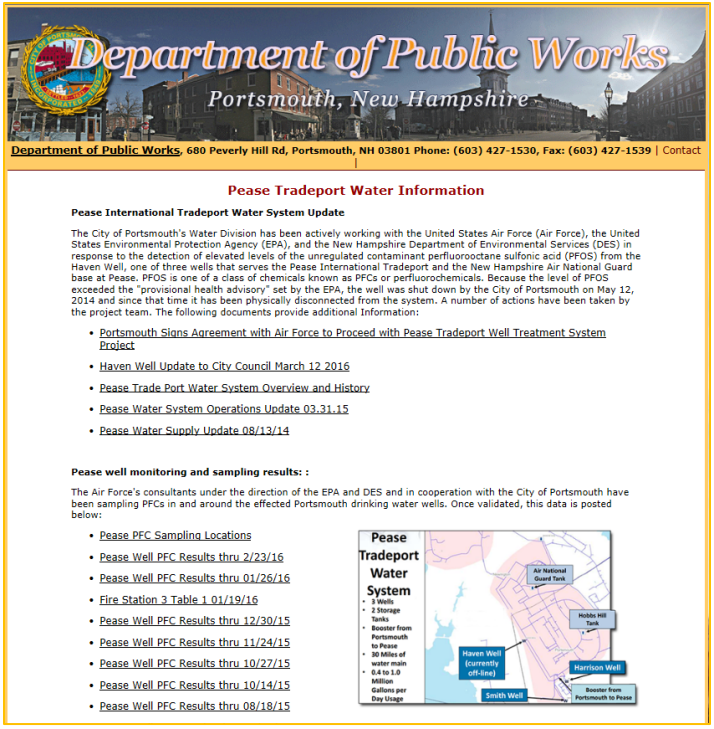
Community Assistance Panel (CAP)

- ATSDR established the CAP in Portsmouth to address questions and concerns about health impacts related to the PFC contamination at Pease
- The CAP provides an avenue for ATSDR to inform the community of site-specific findings as they become available.

Looking Ahead for 2016

- Design and construction of treatment systems
- Continued monitoring of PFCs aquifer cleanup
- Spring – Release of Final Round of Blood Testing
  - 471 Tested during first round
  - 1,107 Tested during second round
- Blood Testing and Biomonitoring Follow-up

Continued Public Outreach and News



Questions?